<110> University of Georgia Research Foundation, Inc
The Ohio State University
Maier, Robert J
Gunn, John S

<120> Hydrogenase Deficient Bacterial Strains

<130> 31725-77460

<150> 60/549,306
<151> 2004-03-02

<150> 60/604,846
<151> 2004-08-26

<160> 21

<170> PatentIn version 3.3

<210> 1
<211> 51
<212> DNA
<213> Samonella typhimurium

<400> 1
tagtggtttg ggataaacgt tatgcaaaca gtgtaggctg gagctgcttc g
51

<210> 2
<211> 50
<212> DNA
<213> Samonella typhimurium

<400> 2
attgagacct ccgaatcgtc gtcatcgtac catatgaata tcctccttag
50

<210> 3
<211> 51
<212> DNA
<213> Samonella typhimurium

<400> 3
tcgtaacgga ataactataa aatgtgtgca gtgtaggctg gagctgcttc g
51

<210> 4
<211> 50
<212> DNA
<213> Samonella typhimurium

<400> 4
cccctaagac taatatccgc attacaaaac catatgaata tcctccttag
50

<210> 5
<211> 51
<212> DNA
<213> Samonella typhimurium

<400> 5

aaaggagaaa aaatacgcgt tatgaataac gtgtaggctg gagctgcttc g
51

<210> 6
<211> 50
<212> DNA
<213> Samonella typhimurium

<400> 6
atcgttcttt tccttaacgc ttagcgtacc catatgaata tcctccttag
50

<210> 7
<211> 232
<212> DNA
<213> Samonella typhimurium

<400> 7
gcgtcggcaa tgatcaaatg atcacgattc gccatatcgc caagaagttc cattcccgcc
60

acaatacgca ccccgatggc ttcatcggtc agcaaaatat tgccgacccc taagactaat
120

atccgcatta caaaactgca caaagcttca tgaaatcacg acggttaatg ccgtgagaag
180

tgatgagagt attatctcca gtcattttat agttattccg ttacgaagac ct
232

<210> 8
<211> 518
<212> DNA
<213> Samonella typhimurium

<400> 8
gtactcattg ccgacacatg cccagtaaat acgaaacagc agcgcgacag taaaaatata
60

cgccgtggta aaatggatca gtcgtatcca gcccatccaa aacataaagg tcgcttcacc
120

ttgaatcgat ggcaggggc ggccaatgaa atatcctgta acagccagga cgacaatgga
180

taacgccgtg atccagtgcc ataaacggac cggcgcttca tagatatagt acccctggct
240

ggttatttct ttgagatgca ttgagacctc cgaatcgtcg tcatcgtact gtttgcataa
300

cgtttatccc aaaccactat agttagtgtg ggcatcatat gttgcatttc ttgtctttct
360

caacgtgttt tagtagcaat tatgtttcta attcgtaaca actgattaca tgtgtgctac
420

tcacattact caaaaacata aattaattta atgttattgg tgatgttgag taaatatagc
480

gttgtgatgg catctcttaa tgttgataag aaaccgtg
518

```
<210>   9
<211>   333
<212>   DNA
<213>   Samonella typhimurium

<400>   9
cttatcgtta atccgatacg cttttttcac attatttctg gcggtatacg ccggtgcaaa
60

gtgaatcggg ctcgtttccg cgctcgcgcg taacacaatg atttaccttg ctggcggaac
120

gtcaacggac ccgcaaaagc gccttatgcc cctggcggag cgtggtgcaa aaaggagaaa
180

aaatacgcgt tatgaataac ggtacgctaa gcgttaagga aaagaacgat gactggaaag
240

ctatctccac gcgtcgggga ggcgcgtgat actgccgtca gccactatgt gtttgaagcg
300

ccggtacgcc tgtggcactg gctaacggtg gcc
333


<210>   10
<211>   19
<212>   DNA
<213>   Samonella typhimurium

<400>   10
cacggtttct tatcaacat
19


<210>   11
<211>   20
<212>   DNA
<213>   Samonella typhimurium

<400>   11
gtactcattg ccgacacatg
20


<210>   12
<211>   20
<212>   DNA
<213>   Samonella typhimurium

<400>   12
ccgggatggc ggttcgcttc
20


<210>   13
<211>   20
<212>   DNA
<213>   Samonella typhimurium

<400>   13
gcgtcggcaa tgatcaaatg
20


<210>   14
<211>   21
```

<212> DNA
<213> Samonella typhimurium

<400> 14
cttatcgtta atccgatacg c
21

<210> 15
<211> 20
<212> DNA
<213> Samonella typhimurium

<400> 15
ggccaccgtt agccagtgcc
20

<210> 16
<211> 24
<212> DNA
<213> Samonella typhimurium

<400> 16
gctctagaaa aaatacgcgt tatg
24

<210> 17
<211> 25
<212> DNA
<213> Samonella typhimurium

<400> 17
cccaagctta gcgtacctgg acggc
25

<210> 18
<211> 24
<212> DNA
<213> Helicobacter hepaticus

<400> 18
ttcgtggtat gaggataatc agcc
24

<210> 19
<211> 24
<212> DNA
<213> Helicobacter hepaticus

<400> 19
aataaagcac aactcccgtg agag
24

<210> 20
<211> 23
<212> DNA
<213> Helicobacter hepaticus

<400> 20
ggctagatac aagaatcgct aat
23

<210> 21
<211> 23
<212> DNA
<213> Helicobacter hepaticus

<400> 21
ctacctacta ccgcataatc aag
23